REMARKS

The following remarks are responsive to the Examiner's Section Advisory Action dated January 4, 2012 (note that the Examiner rendered a First Advisory Action on November 22, 2011 after a Final Office Action dated September 26, 2011).

Summary of Advisory Action

In the Examiner's Second Advisory Action, the Examiner indicated that Applicant's Amendment filed on December 21, 2011 was considered but did not place the application in condition for allowance. Thus, Claims 1, 2, and 4-7 remain rejected under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as being obvious of the Murata et al. reference (U.S. Patent No. 6,017,213), as indicated in the Examiner's First Advisory Action dated November 22, 2011.

Response to Claim Rejections

By this response, Applicant has amended independent Claim 1 to recite features of the claimed invention which are not believed to be disclosed or rendered obvious by the Murata et al. reference. In particular, the amendments are directed toward emphasizing that **any vector component of said low-temperature gas that is parallel to the flow direction of said high-temperature gas is in a downstream direction** (i.e., that the low-temperature gas has no velocity vector component in a direction opposite to the flow of the high-temperature gas).

In Applicant's previous response dated December 21, 2011 responding to the Examiner's First Advisory Action, Applicant argued that in the claimed invention, the low-temperature gas has no velocity vector component in a direction opposite to the flow of the high temperature gas and therefore, the claimed invention solves the problem of power-heat efficiency reduction experienced by the configuration disclosed by Murata. However, the Examiner took the position that the claims only require that the low-temperature gas reaches the centermost portion of the high temperature gas for mixed cooling, which the Murata reference purportedly shows in Figure 6 thereof. Thus, the present amendment is directed toward reciting in the claims those features which the Examiner argued were not previously in the claims, but were argued by Applicant as being patentably distinguishable features of

the claimed invention, i.e., that the in the claimed invention, the low-temperature gas has no velocity vector component in a direction opposite to the flow of the high temperature gas.

Applicant has previously argued that, in the embodiments described in the Murata et al. reference and shown in Figures 3, 6, 8, 9, and 10, the cooling airs CA appear to define a fluid flow having two directional components: 1) a first component directed toward a head of a probe; and 2) a second component directed toward the centermost portion of the high temperature gas. The Murata et al. reference teaches that the cooling airs CA flowing in the first directional component toward the head of the probe are intended to cool the front end portion of the probe to prevent heat damage. (See 5: 25-33). In this regard, ***the Murata et al. reference actually teaches away from the claimed invention*** because it requires that a portion of the cooling airs flow in a direction that opposes the high-temperature gas, i.e. in an upstream direction.

Furthermore, the cooling airs CA flowing in the first directional component, i.e., toward the head of the probe, have a tendency to flow into a cement kiln when the speed of the cooling airs CA is high, which is problematic because of power/heat efficiency reduction.

Conversely, in the claimed invention, the low-temperature gas has no velocity vector component in a direction opposite to the flow of the high-temperature gas. Thus, the low-temperature gas does not flow toward the head of a probe and into the cement kiln, even when the speed of the low-temperature gas is high. As a result, the claimed invention solves the problem of power/heat efficiency reduction experienced as a result of the configuration disclosed in the Murata et al. reference.

Furthermore, the fact that the low-temperature gas has no velocity vector component in a direction opposite to the flow of high-temperature gas provides several other advantages, as outlined in Paragraph [0029] of the present patent application, reproduced below for the Examiner's convenience

> [0029] When cooling the high-temperature combustion gas from the above-mentioned cement kiln 2, with the probe 4 according to the present invention, the cooling air that flows in the inner tube 4a from the discharge holes 4c flows in the direction that is substantially perpendicular to the sucking direction of the high-temperature combustion gas and is toward the center of the flow of the

high-temperature combustion gas with a certain amount of momentum, so that the low-temperature gas reaches to the central portion of the flow of the high-temperature combustion gas, and is mixed with the high-temperature combustion gas, which rapidly cools the high-temperature combustion gas. In addition, the low-temperature gas has no velocity vector ingredient in a direction opposite to the flow of the combustion gas, so that exhaust gas from the cement kiln 2 that is not extracted is not cooled by the cooling air, which allows the low-temperature gas to be made high-speed and allows the velocity of the cooling air between the inner and outer tubes to be raised to a permissible limit of the pressure loss accompanying the increase in the flow velocities. As a result, the outer diameter of the probe can be held small.

Therefore, Applicant maintains that the all of the limitations recited in independent Claim 1 are not anticipated by the Murata et al. reference. Furthermore, since the Murata et al. reference teaches away from the claimed invention, i.e., that any vector component of said low-temperature gas that is parallel to the flow direction of said high-temperature gas is in a downstream direction of the high-temperature combustion gas, it would not have been obvious to one skilled in the art at the time of the invention to derive the claimed invention from the teachings of the Murata et al. reference. Thus, Claim 1 is believed to be allowable, as are claims 2 and 4-7 as being dependent upon an allowable base claim.

Conclusion

On the basis of the foregoing, Applicant respectfully submits that the stated grounds of rejection have been overcome, and that the Claims are now in condition for allowance. An early Notice of Allowance is therefore respectfully requested. Should the Examiner have any questions, the Examiner is invited to contact Applicant's counsel at the telephone number listed below.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

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